

REMARKS

This Amendment is fully responsive to the non-final Office Action dated June 9, 2009, issued in connection with the above-identified application. Claims 1-25 are pending in the present application. With this Amendment, claims 1-14, 17, 18 and 20-25 have been amended. No new matter has been introduced by the amendments made to the claims. Favorable reconsideration is respectfully requested.

To facilitate the Examiner's reconsideration of the present application, the Applicants have provided amendments to the specification and the abstract. The changes to the specification and the abstract include minor editorial and clarifying changes. Replacement paragraphs and a substitute abstract are enclosed. No new matter has been introduced by the amendments made to the specification and the abstract.

In the Office Action, claims 7, 9, 11 and 12 are objected to but would be allowable if rewritten in independent form to include all the limitations of their base claim and any intervening claims. The amendments and arguments provided herein are believed to be sufficient to overcome the rejection to the base claim from which claims 7, 9, 11 and 12 depend. Accordingly, the withdrawal of the objection to claims 7, 9, 11 and 12 is now respectfully requested.

In Office Action, claims 1-20 have been objected to because of minor informalities. The Applicants have amended the claims to address the objections noted by the Examiner. The amendments to the claims are also consistent with the Examiner's suggestions. Withdrawal of the objection to claims 1-20 is now respectfully requested.

In the Office Action, claims 2, 3, 5, 6, 8, 10, 12, 14, 21, 22, 24 and 25 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite. The Applicants have amended the above claims to address the issued identified by the Examiner. The amendments to the claims are also consistent with the Examiner's suggestions. Withdrawal of the rejection to claims 2, 3, 5, 6, 8, 10, 12, 14, 21, 22, 24 and 25 under 35 U.S.C. 112, second paragraph, is now respectfully requested.

Additionally, in the Office Action, claims 6, 10, 12 and 14 are indicated as being allowable if amended to address the rejection under 35 U.S.C. 112, second paragraph. As noted above, claims 6, 10, 12 and 14 have been amended to address the rejection under 35 U.S.C. 112,

second paragraph. Accordingly, claims 6, 10, 12 and 14 should now be in condition for allowance.

In the Office Action, claims 1 and 18 had been provisionally rejected on the grounds of non-statutory obviousness-type double patenting as being unpatentable over claim 15 of co-pending application no. 10/569,730. The Applicants have amended claims 1 and 18 such that the claims are now believed to be clearly distinguished from claim 15 of co-pending application no. 10/569,730.

Specifically, independent claims 1 and 18 have been amended to clarify that “the number of signal-receiving timings at which the receiving station receives signals is less than or equal to the maximum number of effective branches.” On the other hand, claim 15 of co-pending application no. 10/569,730 does not disclose or suggest the above feature. Withdrawal of the non-statutory obviousness-type double patenting rejection to claims 1 and 18 is now respectfully requested.

In the Office Action, claims 1, 2, 16, 21, 23 and 24 have been rejected under 35 U.S.C. 102(b) as being anticipated by Raven (U.K. Application No. GB 1,576,347, hereafter “Raven”). The Applicants have amended independent claims 1, 21, 23 and 24 to help further distinguish the present invention from the cited prior art. Independent claim 1 (as amended) recites the following features:

“[a] wireless transmission system in which a plurality of wireless stations each transmit a signal to a receiving station, and a path diversity system is formed by at least one transmitter-side wireless station, a multi-path channel and the receiving station, the wireless transmission system comprising:

a transmission timing control section for determining a transmission start timing at which to start transmission of a signal, the transmission start timing being a timing obtained by delaying a reference timing for the signal transmission by a predetermined delay amount;

a transmitting section for transmitting the signal at the transmission start timing determined by said transmission timing control section; and

a receiving section provided in the receiving station for receiving the transmitted signal,

wherein the predetermined delay amount is determined so that 1) signals are received by said receiving section at a plurality of signal-receiving timings; 2) a number of

signal-receiving timings is less than or equal to a predetermined maximum number of effective branches; 3) a difference between the plurality of signal-receiving timings is greater than or equal to a predetermined delay resolution; 4) and a difference between a maximum value and a minimum value of the plurality of signal-receiving timings is less than or equal to a predetermined maximum delay, and

when a number of transmitter-side wireless stations is larger than the predetermined maximum number of effective branches, the number of signal-receiving timings at which the receiving station receives signals is made equal to the predetermined maximum number of effective branches.” (Emphasis added).

The features emphasized above in independent claim 1 are similarly recited in independent claims 21, 23 and 24 (as amended). Additionally, the features emphasized above in independent claim 1 (and similarly recited in independent claims 21, 23 and 24) are fully supported by the Applicants’ disclosure (see e.g., ¶[0024] and ¶[0040]).

The present invention (as recited in independent claims 1, 21, 23 and 24) is distinguishable from the cited prior in that even if the number of wireless stations is larger than the maximum number of effective branches that contribute to a path diversity effect at the receiving station, the number of timings at which the receiving station receives signals can be made equal to the maximum number of effective branches. Accordingly, even if the maximum number of effective branches in a wireless transmission system is limited, it is possible to obtain a maximum path diversity effect. Therefore, it is possible to improve the transmission characteristics of the wireless transmission system.

In the Office Action, the Examiner considers the number of signal-receiving timings being “less than or equal to a predetermined maximum number of effective branches” of the present invention as corresponding to a “maximum number of repeaters” disclosed in Raven.

However, in the present invention (as recited in independent claims 1, 21, 23 and 24) “even if the number of wireless stations is larger than the maximum number of effective branches that contribute to a path diversity effect at the receiving station, the number of timings at which the receiving station receives signals can be made equal to the maximum number of effective branches.” That is, if the number of transmitter-side wireless stations is larger than the maximum number of effective branches, the number of timings at which the receiving station receives signals can be made equal to the maximum number of effective branches.

On the other hand, in Raven, the number of timings at which the receiving station receives signals is equal to the number of the repeaters. Thus, when the number of the repeaters is larger than the maximum number of effective branches that contribute to a path diversity effect at the receiving station, transmission characteristics will deteriorate (as described in Fig. 42; and ¶[0019] to ¶[0021] of the Applicants' disclosure).

Based on the above discussion, Raven fails to anticipate or render obvious independent claims 1, 21, 23 and 24 (as amended). Likewise, Raven fails to anticipate or render obvious claims 2, 16 at least by virtue of their dependencies from independent claim 1.

In the Office Action, claims 3 and 19 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Raven; claims 4 and 15 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Raven in view of Rowitch (U.S. Publication No. 2004/0266338, hereafter "Rowitch"); claim 5 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Raven in view of Rowitch, and further in view of Guerillot (U.S. Patent No. 4,808,008, hereafter "Guerillot"); claims 17 and 18 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Raven in view of Ngo et al. (U.S. Publication No. 2006/0057958, hereafter "Ngo"); and claim 20 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Raven in view of Takai (Article entitled "BER performance of anti-multipath modulation scheme PSK-VP in its optimum face-wave form," hereafter "Takai").

Claims 3-5, 15 and 17-20 depend from independent claim 1. As noted above, Raven fails to anticipate or render obvious the features recited in independent claim 1 (as amended). Moreover, Rowitch, Guerillot, Ngo and Takai fail to overcome the deficiencies noted above in Raven. Accordingly, no combination of Raven with Rowitch, Guerillot, Ngo or Takai would result in, or otherwise render obvious, claims 3-5, 15 and 17-20 at least by virtue of their dependencies from independent claim 1.

In the Office Action, claims 8, 22 and 25 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Raven in view of Matsui et al. (U.S. Publication No. 2001/0043156, hereafter "Matsui"). Claim 8 depends from independent claim 1. As noted above, Raven fails to disclose or suggest the features of independent claim 1 (as amended). Moreover, Matsui fails to overcome the deficiencies noted above in Raven. Accordingly, no combination of Raven and Matsui would result in, or otherwise render obvious, claim 8 at least by virtue of its dependency from independent claim 1.

Additionally, the Applicants have amended independent claims 22 and 25 similar to that of independent claim 1. That is, independent claims 22 and 25 (as amended) have been amended to point out that “even if the number of wireless stations is larger than the maximum number of effective branches that contribute to a path diversity effect at the receiving station, the number of timings at which the receiving station receives signals can be made equal to the maximum number of effective branches.”

Conversely, in Raven, the number of timings at which the receiving station receives signals is equal to the number of the repeaters, and when the number of the repeaters is larger than the maximum number of effective branches that contribute to a path diversity effect at the receiving station, transmission characteristics will deteriorate (as described in Fig. 42; and ¶[0019] to ¶[0021] of the Applicants’ disclosure).

Additionally, Matsui fails to overcome the deficiencies noted above in Raven. Accordingly, no combination of Raven and Matsui would result in, or otherwise render obvious, independent claims 22 and 25 (as amended).

In light of the above, the Applicants respectfully submit that all the pending claims are patentable over the prior art of record. The Applicants respectfully request that the Examiner withdraw the rejections presented in the Office Action, and pass the present application to issue. The Examiner invited to contact the undersigned by telephone to resolve any remaining issues.

Respectfully submitted,

Hideki NAKAHARA et al.

/Mark D. Pratt/

By 2009.09.09 14:48:07 -04'00'

Mark D. Pratt
Registration No. 45,794
Attorney for Applicants

MDP/ats
Washington, D.C. 20005-1503
Telephone (202) 721-8200
Facsimile (202) 721-8250
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